Case 3682

The work 'The White-cheeked Geese: *Branta canadensis, B. maxima, B. 'lawrensis', B. hutchinsii, B. leucopareia,* and *B. minima.* Taxonomy, ecophysiographic relationships, biogeography, and evolutionary considerations, Volume 1, Eastern taxa; Volume 2, Western taxa, biogeography, and evolutionary considerations' by Harold C. Hanson: proposed suppression for nomenclatural purposes

Richard C. Banks

Department of Vertebrate Zoology, National Museum of Natural History, P.O. Box 37012, Washington, DC 20013–7012 U.S.A.
(e-mail: eudromia22@aol.com)

Mary LeCroy

Department of Ornithology, American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024 U.S.A.
(e-mail: lecroy@amnh.org)

Richard Schodde

Australian National Wildlife Collection, National Research Collections, Australia, CSIRO, P.O. Box 1700, Australian Capital Territory 2601, Australia (e-mail: rschodde@grapevine.com.au)

Abstract. The purpose of this application under Articles 78.1 and 81.1 of the Code is to suppress for nomenclatural purposes the two-volume work 'The White-cheeked geese: *Branta canadensis, B. maxima, B. 'lawrensis', B. hutchinsii, B. leucopareia,* and *B. minima.* Taxonomy, ecophysiographic relationships, biogeography, and evolutionary considerations,' by Harold C. Hanson. Reasons for suppression are the work's many confounded new taxon designations, inappropriately chosen types, inadequately diagnosed new taxa, variable and confused authorships, and a flawed neotype designation. Together they serve as evidence of general nomenclatural dysfunction. If not suppressed, Hanson's work will become a source of destabilisation the nomenclature of the *Branta canadensis* complex.

Keywords. Nomenclature; taxonomy; Aves; Anseriformes; ANATIDAE; White-cheeked Goose; Canada Goose; *Branta canadensis*; Tundra Goose; *Branta hutchinsii.*

---

1. The *Branta canadensis* (Linnaeus, 1758) species-group is a widespread and well-known complex of large North American geese, commonly known collectively as the White-cheeked or Canada Goose (Delacour, 1954, p. 150; Johnsgard, 1978, p. 76; Carboneras, 1992, pp. 583–584; Kear, 2005, p. 306). It has invaded urban areas in parts of the United States and has been introduced successfully to northwestern Europe and New Zealand (Long, 1981, p. 44). Originally named by Linnaeus (1758,

p. 123), the complex was long considered to comprise one variable species with *canadensis* 8–12 subspecies (Delacour, 1954, pp. 154–156; Palmer, 1976, pp. 183–234; Johnsgard, 1979, pp. 441–444; Bellrose, 1980, pp. 141–164; Carboneras, 1992, pp. 583–584; Mowbray et al., 2002, pp. 5–9; Boyd & Dickson in Kear, 2005, p. 306). In 2004, the Committee on Classification and Nomenclature of the American Ornithologists' Union (Banks et al., 2004) divided the complex into two species by separating the form *hutchinsii* Richardson, 1832 (Tundra Goose) from *canadensis* on the basis of DNA sequence and other evidence; all remaining then-accepted taxa were treated as subspecies in either *canadensis* or *hutchinsii* without further splitting. This lead has since been followed in the influential Howard & Moore *Complete checklist of the birds of the world* (Dickinson & Remsen, 2013, pp. 9–10) and Baldassarre's (2014, pp. 221–262) up-to-date review of North American waterfowl, wherein the indicated consensus is that (1) *B. hutchinsii* breeds from west and north Alaska to central north Canada, and migrates to winter from the west and southwest U.S.A. to Mexico and Texas, and (2) *B. canadensis* breeds from south Alaska and west Canada to central east and southeast Canada and northeast U.S.A., most populations migrating to winter across the U.S.A. to north Mexico.

2. In 2006 and 2007, the late Harold C. Hanson authored two, annually successive volumes of a monograph of the *Branta canadensis* complex, which he split into six species and 218 subspecies (Hanson, 2006, 2007). Bertin W. Anderson was his editor and publisher and the co-author of four chapters in Volume 2 (Hanson, 2007). One species was proposed as new (*lawrensis* Hanson, 2007, p. 195), and 207 new subspecies were described or indicated as well. This astonishing splitting of infra-specific taxa has no parallel in the Aves. No other species complex today is recognised with more than a quarter of this number of subspecies, and the one or two that approach this level are widespread across several continents and archipelagos (Dickinson & Remsen, 2013; Dickinson & Christidis, 2014). There are, furthermore, serious irregularities and faults in the work's application of the nomenclatural rules in the current edition of the Code; the cataloguing of these deficiencies is the focus of this application. Detailed below, the anomalies and shortcomings in paragraphs 3–6 pervade the work while those in paragraphs 7–9 are more limited but still serious.

3. Of the 207 new nominal subspecies introduced in Hanson's (2006, 2007) two volumes, 45 are not explicitly annotated as intentionally new; thus their names are unavailable under Article, 16.1 of the Code. These nominal taxa are formally named, described and assigned types, but their names are placed in quotation marks at the place of original description. The reason for the quotation marks, explained in the Editor's Note on p. ix of Volume, 1, was to identify prospective new taxa that were so far known from only one or two specimens from wintering quarters. Thus it might be argued that such names were not even used as valid when proposed (Article, 11.5 of the Code). Yet the names are also sprinkled throughout the two volumes of text in descriptive comparisons of subspecies, and there the quotation marks are often omitted, thereby tending to mislead and confuse the reader. The availability of the new nominal species *lawrensis* proposed by Hanson (2007, p. 195), and a further four new nominal subspecies – *B. hutchinsii sverdrupi* (p. 13), *B. hutchinsii gabrielsoni* (p. 280), *B. hutchinsii eielsoni* (p. 296) and *B. canadensis montanensis* (p. 324) – are also compromised. Although described in a way that appears to make them available, viz., with designated types and annotated respectively as 'new species' and 'new

subspecies', these names are placed in quotation marks at the place of original description, thereby evidently once again running afoul of Article, 11.5. Bahr in Dickinson & Remsen (2013, pp. 394–397) did not accept them as available names.

4. A majority (113) of the holotypes for the 158 nominal subspecies availably published as new cannot be assigned reliably to regional populations, leaving the application of the names they carry in limbo. This is because they are selected from locations outside breeding zones, at wintering and stop-over grounds and along migratory flyways where different breeding populations from across cool temperate to Arctic North America congregate and mingle. Many come from the same type locality: 19 from Pierre in South Dakota, 10 from Cudworth in Saskatchewan and another 10 from Cibola National Wildlife Refuge on the Arizona-California border. In almost all cases, the various breeding populations to which the types belong are unknown, or ill-defined and unclear. Identifying the types with those populations is, as explained in paragraph 5, an impossible task using morphological methods and the inadequate diagnoses supplied by Hanson and his editor-publisher, Bertin W. Anderson. Even tracing by DNA technology in the future would be time-consuming because of the need to sample all local breeding populations across the north of North America for comparison against types.

5. Although all new taxa are formally described, the descriptions themselves are generalised, diagnostically deficient and rarely state unambiguously 'characters that are purported to differentiate the taxon' as required by Article, 13.1.1 of the Code. There is no formal key to the taxa, nor are descriptive details presented in a comparative manner that identifies and contrasts differentiating traits among taxa. Such comparative details are crucial for taxon identification in the *canadensis* complex because differences in body tones and barring, neck pattern and gross size, which are the primary traits used for diagnosis by Hanson (2006, 2007), are so slight and nuanced among so many taxa and so varied among individuals due to wear, age, sex and even individuality (Delacour, 1954, pp. 150–78) as to require much more precise delineation than he provides. Size, for example, varies not only between regional populations but also between the sexes, such that opposite sexes often overlap in different regional populations. Yet Hanson's diagnoses of new taxa, which use size as a primary marker for many subspecies, give users no chance of applying it because his morphometric formulae often fail to identify sexes, including those of holotypes. That this has serious nomenclatural implications becomes clear when it is realised that most types come from mixed migratory populations of no known regional breeding source, as explained in paragraph 4 above. As a consequence, it is impossible to assign to regional breeding populations any of the names borne by these types with any consistency or reliability, let alone confidence.

6. Specification of type specimens and their institution of deposition is shambolic. All of the 207 new subspecies described or indicated in the two Hanson volumes are designated with holotypes. Nine are cited as held in recognised United States institutional museums, and so are secure. Two more, of *Branta canadensis pondi* Hanson, 2007 (p. 234) and *B. canadensis dawsoni* Hanson, 2007 (p. 243), are recorded as deposited in the private collection of Hanson's editor, Bertin W. Anderson, and so of unsure security. All holotypes of the remaining 196 new subspecific names were originally held in the collection of the Illinois Natural History Survey (INHS) at Champaign, Illinois, where Hanson worked. Then, on 31 October, 2006, they were

formally donated to the Field Museum of Natural History, Chicago, for safe-keeping, along with the rest of the INHS collection of the White-cheeked Goose complex (Hanson, 2007, p. vi, Editor's Comment). The Field Museum, however, has records of only 166 type-labelled specimens coming to it (D. Willard, pers. comm.), leaving the whereabouts of the remaining 30 unestablished. Three of the 166 specimens are of unpublished taxa, and eight more apply to just four names, indicating double-labelling. In another ten, the information on the type label conflicts in one way or another with information in the published citation, either in INHS number, locality, date or sex. Such ambiguities place questions over the identity of either type specimen or type locality or both. As for the 30 untraced holotypes, most if not all may be included, unannotated, among the *c.* 1500 other specimens of the White-cheeked Goose complex that also came to the Field Museum from the INHS in late 2006. Tracking them will be difficult, even impossible, because, judging from the nature of the errors uncovered above, discrepancies between data on specimens and published type citations are likely to be common.

7. As was noted in paragraph 1, *Branta hutchinsii* is the one species in the *canadensis* complex that convention as well as Hanson separate from *B. canadensis*. Its type material, however, is lost (Hellmayr & Conover, 1948, p. 306). Because Hanson (2006, 2007) recognised so many subspecies in *hutchinsii* (71 newly and availably described), he designated a neotype to fix the nominotypical form nomenclaturally. He (Hanson, 2007, p. 9) nevertheless did so in a way that is unacceptable under Article 75.3 of the Code. The designation does not meet the requirements of:

(1) Article 75.3.2 because, although it describes the species generally and refers to the non-comparative original description, it specifies none of the traits that differentiate *hutchinsii* from *canadensis* or other presumptive species taxa in the complex.
(2) Article 75.3.5, which is not addressed; and
(3) Article 75.3.6 because the neotype is from Squaw Creek National Wildlife Refuge, Missouri, central U.S.A., in the wintering range for many populations of the complex and far from the original type locality of *hutchinsii*, at its breeding grounds on Melville Peninsula in the Canadian Arctic. This creates strong doubt that the neotype is from the original population, and raises the possibility, indeed likelihood, that it is of a different taxon, so altering the taxonomic application of the name (see paragraph 4 above).

8. Three nominal taxa proposed as new in Hanson (2007), with the annotation 'new species' or 'new subspecies' against them, are based by direct or indirect reference on earlier names published availably by earlier authors. They are, in Hanson's own conflicted format between our quotation marks:

(i) '*Branta hutchinsii hutchinsii* (Richardson) 1832 new subspecies', on p. 9. *Anser hutchinsii* Richardson, with original place of publication, is cited as the only name in its synonymy. It leads us to presume that the annotation 'new subspecies' is either a simple editorial error or reflects a misapprehension that the designation of a neotype for *hutchinsii* (see paragraph 7 above) required Hanson to rename it as well;
(ii) '*Branta hutchinsii barnstoni* new subspecies', on p. 127. This name was published without any attributive reference, but its cited holotype, USNM

20116 in the National Museum of Natural History, Smithsonian Institution, Washington, DC, is also the holotype of *Bernicla barnstonii* Ross, 1862 (see Deignan, 1961). The name *barnstoni* Hanson, 2007 is thus a junior primary homonym (Article 58.14 of the Code) and junior objective synonym of *barnstonii* Ross, 1862; and

(iii) '*Branta maxima* (Delacour) new species', on p. 156. Faulty indication of this nominal species as new parallels that for the subspecies '*Branta hutchinsii hutchinsii* (Richardson) 1832 new subspecies' in (i) above. Furthermore, Hanson (2007, p. 158) subsequently referred its nominate subspecies to Delacour alone, but in the form *Branta maxima maxima* (Delacour). Given that Delacour (1951, p. 5) originally published *maxima* in the combination *Branta canadensis maxima*, Hanson here, as well as in other cases, confounded the use of parentheses around authors names (Article 51.3 of the Code).

9. Authorship of names is attributed inconsistently. Both volumes of Hanson's work cite him alone as author on their title pages, and all chapters in both works lack any further indication of authorship except four in volume 2 (Hanson, 2007). Those four chapters are headed with Hanson and his editor, Bertin W. Anderson, as co-authors. No author is given against the new subspecies names introduced in volume, 1, and which are thus attributable unambiguously to Hanson as the stated author of the Volume. In volume 2, however, joint authorship by Hanson & Anderson is inserted erratically. It is cited against 17 of 77 names introduced in the unauthored chapters, implying that the remaining 60 names are attributable to Hanson alone as stated author of the volume. But in the four co-authored chapters, joint authorship is cited explicitly for only 35 of the 54 names, leaving the remaining 19 names in limbo. Are they also to be attributed jointly to Hanson & Anderson, in accord with chapter authorship? Or are they to be attributed to Hanson alone, in accord with the format in the non-jointly authored chapters of volume 2 and the interpretation of Bahr in Dickinson & Remsen (2013, pp. 394–397)?

10. Although significant in themselves, some of the nomenclatural flaws and irregularities in Hanson's (2006, 2007) monograph appear relatively trivial in such a large work. Others, however, have much greater effect, such as inadequate descriptions and ill-chosen types of often uncertain identity which in concert confound the application of names. When both minor and major problems are added together, they reveal a nomenclature that is consistently confused and dysfunctional, and collectively unsound. How else is a work to be judged when 55 of its names for newly proposed taxa – more than a quarter – are unavailable or otherwise invalid for one reason or another? Its geographic selection of type specimens, furthermore, is unworkable in ornithology. So far, no mainstream checklist, handbook or waterfowl management manual has adopted the Hanson nomenclature or any of its new taxa. Baldassarre (2014) expressly avoided it in his review of North American waterfowl. In their respected global checklist, Dickinson & Remsen (2013) listed Hanson's new taxa in an Appendix but adopted none, awaiting instead an assessment by the Committee on Classification and Nomenclature of the American Ornithologists' Union. That committee has since unanimously endorsed the application here to suppress Hanson's (2006, 2007) works for nomenclatural purposes (see paragraph 11). In the electronic media, the two primary global checklists of birds (Clements et al., 2014; Gill & Donsker, 2015) have also shunned Hanson's nomenclature so far.

We know, in fact, of only one work that has actually adopted it: a companion volume by his editor Bertin W. Anderson (2010), published to support Hanson's systematics (Banks, 2011). Fortunately, none of Hanson's names are published there in a way, with type designations and annotations of 'new species/subspecies', that would make them available and require suppression of Anderson's work as well. Consequently, suppressing the Hanson monograph for nomenclatural purposes will have a far less adverse impact in zoology than allowing it to stand as source of uncertainty, confusion and instability for decades to come.

11. We appreciate that nomenclatural suppression of a large, 2-volume work devoted substantially to the publication of new taxa is not to be undertaken lightly. Thus the reviewing commissioner for this application drew our attention to two options. One was complete nomenclatural suppression as advocated here. The other was, after unavailable names were eliminated, a series of reviews of all other names with irregularities, such as those with conflicted or untraceable type specimens and of unclear authorship or which were nomina dubia owing to lack of breeding site data. Their status or form could then be resolved by rulings of the Commission. We have considered these options at length, and reached the conclusion that complete nomenclatural suppression is the simpler and better course for three reasons. First, complete suppression would remove not only faulty names but also a work of serious nomenclatural malpractice from zoological nomenclature. In addition to the shortcomings elaborated above, for example, Hanson never referred to the Code as his base for nomenclatural procedures and authored previously published taxa anew whenever he changed their rank, in quasi-imitation of the procedure for new combinations in botanical nomenclature (see paragraph 8); parentheses around authors names are not used correctly either. Secondly, the review-of-irregularities approach would involve much tedious and time-consuming work that could, when finally resolved, result in long lists of species group names being placed on – and encumbering – the Official List and Official Index. The number of names that could be added runs potentially to 207. Thirdly, we have canvassed the options widely in the ornithological community, particularly in the Working Group on Avian Nomenclature of the International Ornithologists' Union and the Committee on Classification and Nomenclature of the American Ornithologists' Union. Universal preference was expressed for complete nomenclatural suppression of Hanson's (2006, 2007) monograph.

12. The International Commission on Zoological Nomenclature is accordingly asked:

(1) to use its plenary power to suppress for nomenclatural purposes the work 'The White-cheeked Geese: *Branta canadensis*, *B. maxima*, *B. 'lawrensis'*, *B. hutchinsii*, *B. leucopareia*, and *B. minima*. Taxonomy, ecophysiographic relationships, biogeography, and evolutionary considerations, Volume 1, Eastern taxa (2006); Volume 2, Western taxa, biogeography, and evolutionary considerations (2007)' by Harold C. Hanson;

(2) to place on the Official Index of Rejected and Invalid Works in Zoological Nomenclature the work 'The White-cheeked Geese: *Branta canadensis, B. maxima, B. 'lawrensis', B. hutchinsii, B. leucopareia,* and *B. minima.* Taxonomy, ecophysiographic relationships, biogeography, and evolutionary considerations, Volume 1, Eastern taxa (2006); Volume 2, Western taxa,

biogeography, and evolutionary considerations (2007)' by Harold C. Hanson, as suppressed in (1) above.

This application has been reviewed and approved unanimously by both the Working Group on Avian Nomenclature of the International Ornithologists' Union and the Committee on Classification and Nomenclature of the American Ornithologists' Union.

Acknowledgements

We are grateful to Dr. David Willard (*c/o Field Museum, Chicago*) for providing information on the collections of the White-cheeked Goose complex donated to the Field Museum of Natural History by the Illinois Natural History Survey.

References

Anderson, B.W. 2010. *Evolution and taxonomy of white-cheeked geese*. vi, 495 pp. Avvar Books, Blythe, CA.

Baldassarre, G. 2014. *Ducks, geese, and swans of North America*. Revised ed., vol., 1. xxxvii, 565 pp. Johns Hopkins University Press, Baltimore.

Banks, R.C. 2011. [Review of] *Evolution and taxonomy of white-cheeked geese*, 2010, by B.W. Anderson. *Wilson Journal of Ornithology*, **123**: 650–654.

Banks, R.C., Cicero, C, Dunn, J.L., Kratter, A.W., Rasmussen, P.C., Remsen, J.V., Jr., Rising, J.D. & Stotz, D.F. 2004. Forty-fifth supplement to the American Ornithologists' Union Check-list of North American Birds. *Auk*, **121**: 985–995.

Bellrose, F.C. 1980. *Ducks, geese and swans of North America*. 3rd ed. 540 pp. Stackpole Books, Harrisburg, PA.

Carboneras, C. 1992. Family Anatidae (ducks, geese and swans). Pp. 536–628 *in* del Hoyo, J., Elliott, A. & Sargatal, J. (Eds.), *Handbook of the birds of the world,* vol. 1. 696 pp. Lynx Edicions, Barcelona.

Clements, J.F., Schulenberg, T.S., Iliff, M.J., Roberson, D., Fredericks, T.A., Sullivan, B.L. & Wood, C.L. 2014. *The eBird/Clements checklist of the birds of the world: Version 6.9*. http://www.birds.cornell.edu/clementschecklist/download/

Deignan, H.G. 1961. Type specimens of birds in the United States National Museum. *United States National Museum Bulletin*, **221**: x, 718 pp.

Delacour, J. 1951. Preliminary note on the taxonomy of Canada Geese, *Branta canadensis*. *American Museum Novitates*, **1537**: 1–10.

Delacour, J. 1954. *The waterfowl of the world*, vol. 1. 284 pp. Country Life, London.

Dickinson, E.C. & Christidis, L. 2014. *The Howard & Moore complete checklist of the birds of the world*. 4th Ed., vol., 2. lii, 752 pp. Aves Press, Eastbourne, U.K.

Dickinson, E.C. & Remsen, J.V. Jr. 2013. *The Howard & Moore complete checklist of the birds of the world*. 4th Ed., vol., 1. l, 461 pp. Aves Press, Eastbourne, U.K.

Gill, F.B. & Donsker, D. 2015. *IOC World Bird List Version 5.2*. doi:10.14344/IOC.ML.5.2.

Hanson, H.C. 2006. *The white-cheeked geese:* Branta canadensis, B. maxima, B. 'lawrensis', B. hutchinsii, B. leucopareia, and B minima. *Taxonomy, ecophysiographic relationships, biogeography, and evolutionary considerations, vol. 1. Eastern taxa.* xxiii, 420 pp. Avvar Books, Blythe, CA.

Hanson, H.C. 2007. *The white-cheeked geese:* Branta canadensis, B. maxima, B. 'lawrensis', B. hutchinsii, B. leucopareia, and B minima. *Taxonomy, ecophysiographic relationships, biogeography, and evolutionary considerations, vol. 2. Western taxa, biogeography, and evolutionary considerations.* viii, 692 pp. Avvar Books, Blythe, CA.

Hellmayr, C.E. & Conover, B. 1948. Catalogue of birds of the Americas and the adjacent islands in Field Museum of Natural History. *Field Museum of Natural History Zoological Series*, **13**(1(2)): vii, 434 pp.

Johnsgard, P.A. 1978. *Ducks, geese and swans of the world*. xxiii, 404 pp. University of Nebraska Press, Lincoln & London.

Johnsgard, P.A. 1979. *Order Anseriformes*. Pp. 425–506 *in* E. Mayr & G.W. Cottrell (Eds.), *Check-list of birds of the world*, vol. 1, 2nd ed. Museum of Comparative Zoology, Cambridge, MA.

Kear, J. (Ed.). 2005. *Ducks, geese and swans*, vol. 1. xxi, 446 pp. Oxford University Press, Oxford.

Linnaeus, C. 1758. *Systema Naturae*, Ed. 10, vol. 1. 824 pp. Salvii, Holmiae.

Long, J.L., 1981. *Introduced birds of the world.* 528 pp. A.H. & A.W. Reed, Sydney & Wellington.

Mowbray, T.B., Ely, C.R., Sedinger, J.S. & Trost, R.E. 2002. Canada Goose *(Branta canadensis)*. *In* Poole, A. & Gill, F. (Eds.), *The birds of North America*, **682**: 1–44.

Palmer, R.S. (Ed.). 1976. *Handbook of North American birds,* vol. 2. Waterfowl (first part). xi, 521 pp. Yale University Press, New Haven, CT.

Richardson, J. 1832. *In* Swainson, W. & Richardson, J., *Fauna Boreali-Americana*, vol. 2. lxvi, 523 pp. John Murray, London.

Ross, B.R. 1862. List of mammals, birds, and eggs, observed in the McKenzie's River District, with notices. *The Canadian Naturalist and Geologist*, **7**: 137–155.

Acknowledgement of receipt of this application was published in BZN **72**: 1.

Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to I.C.Z.N., Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).